Differentiate and simplify using the derivatives of sin and cosine only

$$y = \tan(x)$$

$$y = \sec(x)$$

Differentiate f and g

Expect ugly

$$f(x) = x\ln(x) + \tan(x)\sec(x)$$

$$g(x) = \frac{\sec(x) + \tan(x)}{\sin(x) + \cos(x)}$$

Differentiate

$$y = \cos^2(x)$$

Graph the function and its derivative to check that you have done it correctly.

Determine all interesting points on the graph of

$$f(x) = e^{\sin(x)}$$

$$h(x) = f(g(x)) \quad k(x) = f(x) \bullet g(x) \quad j(x) = \frac{g(x)}{f(x)}$$

x	0	1	2	3
f(x)	3	2	0	1
g(x)	2	3	0	1
f'(x)	1	0	3	2
g'(x)	1	3	2	0

$h'(1) =$ $\quad$ $k'(2) =$ $\quad$ $j'(0) =$

$$f(x) = \left(\cos\left(2\sin(3x)\right)\right)^4 \quad \text{find } f'(x)$$

$$g(x) = \ln\left(\frac{\sqrt{x^3+1}}{18x^5}\right) \text{ Find } \frac{\mathrm{dg}}{\mathrm{dx}}$$

$$h(y) = \ln(y) + y \text{ Find } \frac{\mathrm{dh}}{\mathrm{dy}}$$

$$y = x\ln(x) - x$$

Find $\dfrac{dy}{dx}$

Find an antiderivative for $y = \ln(x)$

$$y = \sqrt{x} \quad \text{Find } \frac{dx}{dy}$$

Express your answer as a function of x.

Check your answer by graphing the curve and the tangent line to the curve at (4,2)

$$x^2 - 3xy + y^2 = 4$$

Find $\dfrac{dy}{dx}$

$$x^3y^2 + 2x^2y + 3xy^3 = x + y$$

Find $\dfrac{dx}{dy}$

Find $\dfrac{dy}{dx}$

$$\sin^2(xy)+\cos^2(xy)+x^2y+y^3x^2=\tan^2(y)-\sec^2(y)$$

Find $\dfrac{dy}{dx}$

$$f(x) = \arcsin(\sec(x))$$

Find all stationary points. Find maxima and minima. Justify

$$g(x) = x \cdot \cos\left(x^2\right) \cdot e^{\sin\left(x^2\right)}$$

Find an antiderivative of g

$$h(x) = \ln\left(\sqrt{\frac{x^2}{x^2+1}}\right) \text{ Find } \frac{\text{dh}}{\text{dx}}$$

Find the first derivative of $y = x^x$

$$f(x) = \frac{\tan^{-1}(x)}{x^2+1}$$

Find $f'(x)$, as well as all maxs, mins, and inflection points. Sketch f

$$x^2 + y^2 = r^2$$

R is a constant. Determine the slope of the tangent to the curve at any point (a,b) on the curve.

Find the slope of the line from the origin to (a,b)

Explain the significance of your answers.

Find an antiderivative

$$\frac{1}{1+x^2}$$

$$\frac{x}{1+x^2}$$

$$\frac{x}{1+x^4}$$

$$\frac{x^2}{1+x^2}$$

$$f(x)=\frac{x^{\frac{3}{5}}}{x^{\frac{2}{5}}+1},\ f'(x)=$$

$$f(x)=\frac{x^{\frac{3}{5}}+1}{x^{\frac{2}{5}}},\ f'(x)=$$

$$f(x)=\frac{x^2+1}{x^2-1},\ f'(x)=$$

$$f(x)=\frac{x^3-1}{x^2-1},\ f'(x)=$$